CLAIMS

What is claimed is:

1   1. An image encoder engine for encoding an image, comprising:

2   an image decomposer for decomposing the image into a header and at

3   least one image block, each image block having a set of image elements and

4   each image element having an original image data value;

5   at least one block encoder for receiving each image block and for

6   compressing each image block into an encoded image block by associating

7   each original image data value of the image element with an index to a

8   derived image data value in a set of quantized image date values; and

9   an encoded image composer coupled to the block encoder for ordering

10   the encoded image blocks into a data file.

1   2. The image encoder engine of claim 1 further comprising a header

2   converter coupled to the image decomposer for converting the header into a

3   modified header.

1   3. The image encoder engine of claim 2 wherein the encoded image

2   composer orders the encoded image block and the modified header into a

3   data file.

1   4. The image encoder engine of claim 1 wherein the block encoder further

2   comprises a selection module for computing a set of parameters from the

3   image data values of the set of image elements.

1   5. The image encoder engine of claim 1 wherein the block encoder further

2   comprises a codeword generation module for generating at least one

3   codeword.

1   6. The image encoder engine of claim 1 wherein the block encoder further
2   comprises a construction module for generating the set of quantized image
3   data values including at least one codeword and at least one derived image
4   data value.

1   7. The image encoder engine of claim 1 wherein the block encoder further
2   comprises a block type module for selecting an identifiable block type for the
3   image block.

1   8. An image decoder engine for decoding an encoded image data file,
2   comprising:
3   an encoded image decomposer for decomposing the encoded image
4   data file into a modified header and at least one compressed image block,
5   each image block having at least one associated codeword and a plurality of
6   image elements associated with an index value;
7   at least one block decoder coupled to the encoded image decomposer
8   for decompressing the at least one compressed image block into at least one
9   decompressed image block by generating a set of quantized image data
10 values and mapping the index value to a quantized image data value from the
11 set of quantized image data values; and
12   an image composer for ordering the at least one decompressed image
13 blocks in an output data file.

1   9. The image decoder engine of claim 8 wherein the set of quanitized image
2   data values include the at least one codeword and at least one image data value
3   derived from the at least one codeword.

1   10. The image decoder engine of claim 8 further comprising a header converter
2   coupled to the encoded image decomposer for converting the modified header into
3   an output header.

1   11. The image decoder engine of claim 10 wherein the image composer orders
2   the at least one decompressed image block and the output header into a data file.

1   12. The image decoder engine of claim 8 wherein the at least one block decoder
2   further comprises a block type detector for selecting a block type for each of the at
3   least one compressed image block.

1   13. The image decoder engine of claim 8 wherein the at least one block decoder
2   further comprises a decoder for decompressing each of the at least one compressed
3   image block based on a block type.

1   14. The image decoder engine of claim 8 wherein the at least one block decoder
2   further comprises an output selector for outputting the at least one decompressed
3   image block.

1   15. A method for fixed-rate block-based image compression of an original image,
2   comprising the steps of:
3   decomposing the original image into a header and a plurality of image blocks
4   each having a set of image elements with an original image data value;
5   computing at least one codeword from the original image data value for the
6   set of image elements;
7   generating a set of quantized image data values including the at least one
8   codeword and at least one image value derived from the at least one codeword; and
9   mapping the original image data value to one of the quantized image data
10   values to produce an index value for each image element.

1   16. The method of claim 15 further comprising outputting an encoded image
2   data file.

1   17. The method of claim 15 further comprising the step of converting the header
2   into a modified header.

1   18. The method of claim 17 further comprising the step of composing the

2   modified header and encoded image blocks into the encoded image data file.

1   19. A machine readable medium having embodied thereon a program being

2   executable by a machine to perform method steps for fixed-rate block-based image

3   compression of an original image, the method steps comprising:

4   decomposing the original image into a header and a plurality of image blocks

5   each having a set of image elements with an original image data value;

6   computing at least one codeword from the original image data value for the

7   set of image elements;

8   generating a set of quantized image data values including the at least one

9   codeword and at least one image value derived from the at least one codeword; and

10   mapping the original image data value to one of the quantized image data

11   values to produce an index value for each image element.

1   20. The machine readable medium of claim 19 further comprising the method of

2   outputting an encoded image data file.

1   21. An image encoder system for encoding an original image, comprising:

2   means for decomposing the original image into a header and a plurality of

3   image blocks each having a set of image elements with an original image data value;

4   means for computing at least one codeword from the original image data

5   value for the set of image elements;

6   means for generating a set of quantized image data values including the at

7   least one codeword and at least one image value derived from the at least one

8   codeword; and

9   means for mapping the original image data value to one of the quantized

10   image data values to produce an index value for each image element.

1   22. The image encoder system of claim 21 further comprising means for

2   outputting an encoded image data file.

1   23. A method for fixed-rate block-based image decompression of an encoded

2   image, comprising the steps of:

3   decomposing the encoded image of into a modified header and a plurality of

4   encoded image blocks having at least one codeword and a plurality of image

5   elements associated with an index value;

6   generating a set of quanitized image data values including the at least one

7   codeword and at least one image value derived from the at least one codeword; and

8   mapping the index value for each image element to one of the quantized

9   image data values.

1   24. The method of claim 23 further comprising outputting a decoded image data

2   file.

1   25. The method of claim 23 further comprising the step of converting the

2   modified header into an output header.

1   26. The method of claim 25 further comprising the step of composing the output

2   header and decoded image blocks into the decoded image data file.

1   27. A machine readable medium having embodied thereon a program being

2   executable by a machine to perform method steps for fixed-rate block-based image

3   decompression of an encoded image, the method steps comprising:

4   decomposing the encoded image data file into a modified header and a

5   plurality of encoded image blocks having at least one codeword and a plurality of

6   image elements associated with an index value;

7   generating a set of quanitized image data values including the at least one

8   codeword and at least one image value derived from the at least one codeword; and

9   mapping the index value for each image element to one of the quantized

10   image data values.

1   28. The machine readable medium of claim 27 further comprising the method of
2   outputting a decoded image data file.

1   29. An image decoder engine for decoding an encoded image data file,
2   comprising
3   means for decomposing the encoded image data file into a modified header
4   and a plurality of encoded image blocks having at least one codeword and a
5   plurality of image elements associated with an index value;
6   means for generating a set of quanitized image data values including the at
7   least one codeword and at least one image value derived from the at least one
8   codeword; and
9   means for mapping the index value for each image element to one of the
10   quantized image data values.

1   30. The image decoder engine of claim 29 further comprising means for
2   outputting a decoded image data file.